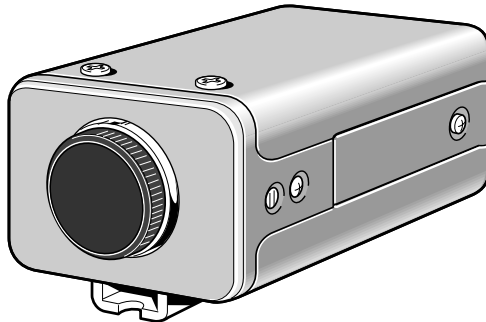


SANYO

VCB-3512T

INSTRUCTION MANUAL

B/W CCD Camera



About this manual

- Before installing and using the camera, please read this manual carefully. Be sure to keep it handy for later reference.

SANYO INDUSTRIAL VIDEO B/W VIDEO CAMERA LIMITED WARRANTY

OBLIGATIONS

In order to obtain warranty service, the product must be delivered to and picked up from an Authorized Sanyo Service Center at the user's expense, unless specifically stated otherwise in this warranty. The names and addresses of Authorized Sanyo Service Centers may be obtained by writing to SFS Corporation, SFC's warranty administrator, at any of the addresses listed below, or by calling (toll-free) 1-800-421-5013.

New Jersey Office
210 Riser Road
Little Ferry, NJ 07643
201-641-3000

California Office
1200 W. Artesia Blvd.
Compton, CA 90220
310-537-5830

Illinois Office
900 N. Arlington Heights Rd.
Itasca, IL 60143
708-775-1414

THIS WARRANTY IS VALID ONLY ON SANYO PRODUCTS PURCHASED OR RENTED IN THE UNITED STATES OF AMERICA, EXCLUDING HAWAII AND ALL U.S. TERRITORIES AND PROTECTORATES. THIS WARRANTY APPLIES ONLY TO THE ORIGINAL RETAIL USER. THE ORIGINAL DATED BILL OF SALE, SALES SLIP OR RENTAL AGREEMENT MUST BE SUBMITTED TO THE AUTHORIZED SANYO SERVICE CENTER AT THE TIME WARRANTY SERVICE IS REQUESTED.

Subject to the OBLIGATIONS above and EXCLUSIONS below, SANYO FISHER (USA) CORPORATION warrants this SANYO product against defects in materials and workmanship for the periods specified below. SFC will repair or replace (at its option) the product and any of its parts which fail to conform to this warranty. The warranty period commences on the date the product was first purchased or rented at retail.

LABOR	PARTS	IMAGE DEVICE
2 YEARS	2 YEARS	2 YEARS

EXCLUSIONS

This warranty does not cover (A) the adjustment of customer-operated controls as explained in the appropriate model's instruction manual, or (B) the repair of any product whose serial number has been altered, defaced or removed.

This warranty shall not apply to the cabinet or cosmetic parts, antenna, knobs, batteries or image burns to projection or picture tubes caused by electronic devices or games.

This warranty does not apply to uncrating, setup, installation, removal of the product for repair or reinstallation of the product after repair. This warranty does not apply to repairs or replacements necessitated by any cause beyond the control of SFC including, but not limited to, any malfunction, defect or failure caused by or resulting from unauthorized service or parts, improper maintenance, operation contrary to furnished instructions, shipping or transit accidents, modification or repair by the user, abuse, misuse, neglect, accident, incorrect power line voltage, fire, flood or other Acts of God, or normal wear and tear.

The foregoing is in lieu of all other expressed warranties and SFC does not assume or authorize any party to assume for it any other obligation or liability.

THE DURATION OF ANY WARRANTIES WHICH MAY BE IMPLIED BY LAW (INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS) IS LIMITED TO THE TERM OF THIS WARRANTY. IN NO EVENT SHALL SFC BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM OWNERSHIP OR USE OF THIS PRODUCT, OR FOR ANY DELAY IN THE PERFORMANCE OF ITS OBLIGATIONS UNDER THIS WARRANTY DUE TO CAUSES BEYOND ITS CONTROL.

SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS AND/OR DO NOT ALLOW THE EXCLUSION OR LIMITATION OF CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS AND EXCLUSIONS MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY HAVE OTHER RIGHTS, WHICH VARY FROM STATE TO STATE.

ATTENTION

For your protection in the event of theft or loss of this product, please fill in the information below for your own personal records.

Model No. _____

Serial No. _____
(Located on back or bottom side of unit.)

Date of Purchase _____

Purchase Price _____

Where Purchased _____

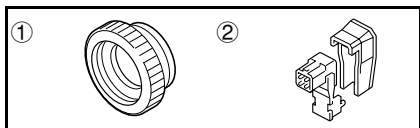
Depending on the conditions of use, installation and environment, please be sure to make the appropriate settings and adjustments. If you need help with installation and/or settings, please consult your dealer.

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ACCESSORIES

- ① C mount adaptor (5 mm) 1 pc.
The C mount adaptor must be used to be able to install a C mount lens on the camera.
- ② Lens iris plug (4-pin) 1 pc.

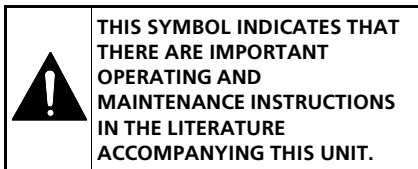


FEATURES

- Built-in interline transfer method 1/2" CCD, approx. 410,000 picture elements
- Low smear, anti-blooming, low lag, no burning and no geometric distortion using the CCD solid state image device.
- 100% solid state components giving excellent immunity to shock and vibration
- Not subject to interference from magnetic or electrostatic fields
- High sensitivity, minimum required illumination of 0,07 lux with F1.2 lens
- Horizontal resolution, more than 570 TV lines
- New backlight compensation function (Active when using an auto-iris lens)
- Externally adjustable flange back (mechanical focus)
- Low power consumption and quick start
- 12 V DC operation

INFORMATION TO USER

Safety Guard



WARNING:

TO PREVENT THE RISK OF FIRE OR ELECTRIC SHOCK , DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

For the customers in Canada

This Class B digital apparatus complies with Canadian ICES-003.

Pour la clientèle canadienne

Cet appareil numérique de la Classe B est conforme à la norme NMB-003 du Canada.

This installation should be made by a qualified service person and should conform to all local codes.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by **Sanyo** may void the user's authority to operate this camera.

PRECAUTIONS

■ In case of problem

Do not use the camera if smoke or a strange odour comes from the unit, or if it seems not to function correctly. Disconnect the power cord immediately, and consult your dealer (or a Sanyo Authorized Service Centre).

■ Do not open or modify

Do not open the cabinet, as it may be dangerous and cause damage to the unit. For internal settings and repairs, consult your dealer (or a Sanyo Authorized Service Centre).

■ Do not put objects inside the unit

Make sure that no metal objects or flammable substance get inside the camera. If used with a foreign object inside, it could cause a fire, short-circuits or damages.

If water or a liquid gets inside the camera, disconnect the power cord immediately, and consult your dealer (or a Sanyo Authorized Service Centre). Be careful to protect the camera from rain, sea water, etc.

■ Be careful when handling the unit

To prevent damages, do not drop the camera or subject it to strong shock or vibration.

■ Install away from electric or magnetic fields

If installed close to a TV, radio transmitter, magnet, electric motor, transformer, audio speakers the magnetic field they generate will distort the image.

■ Protect from humidity and dust

To prevent damages to the camera, do not install it where there is greasy smoke or steam, where the dampness may get too high, or where there is a lot of dust.

■ Protect from high temperatures

Do not install close to stoves, or other heat generating devices, such as spotlights, etc., or where it could be subject to direct sunlight, as that could cause deformation, discoloration or other damages.

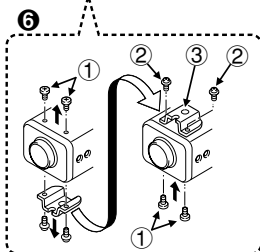
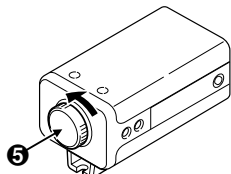
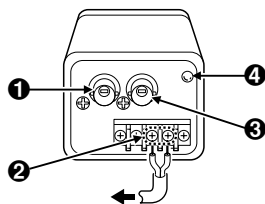
Be careful when installing close to the ceiling, in a kitchen or boiler room, as the temperature may raise to high levels.

Install where the temperature range will stay between -10°C and 50°C . (no condensation)

■ Cleaning

- Dirt can be removed from the cabinet by wiping it with a soft cloth. To remove stains, wipe with a soft cloth moistened with a soft detergent solution and wrung dry, then wipe dry with dry soft cloth.
- Do not use benzine, thinner or other chemical product on the cabinet, as that may cause deformation and paint peeling. Before using a chemical cloth, make sure to read all accompanying instructions. Make sure that no plastic or rubber material comes in contact with the cabinet for a long period of time, as that may cause damage or paint peeling.

PARTS NAMES



- ① Shorter screws: M3 x 4
- ② Longer screws: M3 x 6
- ③ Camera mounting screw hole: 1/4"-20 UNC

① Video output connector (VIDEO OUT: BNC type)

Connect this connector to a device such as a VCR or monitor with a **VIDEO IN** connector.

② 12 V DC input terminal (12 V DC, GND)

③ External sync composite video signal input connector (VS IN: BNC type)

Connect to this connector the synchronizing signal output from a synchronizing signal device or the composite signal of a video distributor.

④ Power indicator (POWER)

Comes on when the power to the camera is on.

⑤ Lens mount cap

The cap is installed to protect the lens mount section.

Remove the lens mount cap before installing a lens (sold separately).

⑥ Camera installation bracket

The bracket can be fixed at the top or bottom of the camera. When fixing the bracket, be sure to use the longer screws and install the shorter screws on the opposite side to seal the openings.

CAUTION:

When installing the camera support, select a location that can support the total weight of the camera and accessories.

PARTS NAMES

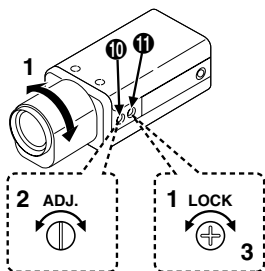
⑧ Lens iris output connector (4 pin)

This 4-pin connector is used to send the DC control signal and power supply to an auto-iris type lens.

⑨ Camera setup section (under the cover)

This unit factory settings are as indicated below. These settings are for when using a 1/2 inch CS mount **DC** (without **EE** internal amplifier) type lens. However, if due to installation conditions or environment the settings may need to be modified for best results (see "**SETTINGS**"). To access the controls, remove the cover fixing screw, then remove the cover.

	Control name	Position
①	High speed electronic shutter switches (E.S.)	All OFF: 1/60 sec
②	Electronic iris (EI)/ Backlight compensation (BLC) switch	OFF
③	PAR:)pv1N3p2.)k.2wp(emfleppl	cgk1mfep2wptcgkpxM32w



10 Flange-back adjustment screw (FLANGE BACK ADJ.)

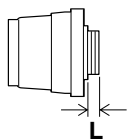
11 Flange-back lock screw (FLANGE BACK LOCK)

■ Flange-back adjustment

If the pick-up surface is not correctly positioned with relation to the lens focal point, the picture will be out of focus (in particular when using auto-iris power zoom lenses, sold separately). If that is the case, adjust the flange-back position as described below.

- 1 Using a + screwdriver, loosen the **FLANGE BACK LOCK** screw (M2:+).
Set the zoom lens to the maximum telephoto position, set the focus using the focus ring on the lens.
- 2 Set the zoom lens to the maximum wide angle position, set the focus using the **FLANGE BACK ADJ.** screw.
- 3 Repeat steps 2 and 3, until the image stays in focus when changing from a telephoto shot to a wide angle shot. When the setting is complete, tighten the **FLANGE BACK LOCK** screw.

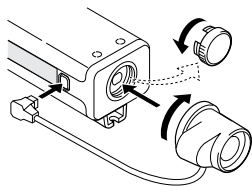
MOUNTING THE LENS



Check the lens mount

Do not use a lens if the length "L" is more than 7 mm. That may damage the camera and prevent proper installation.

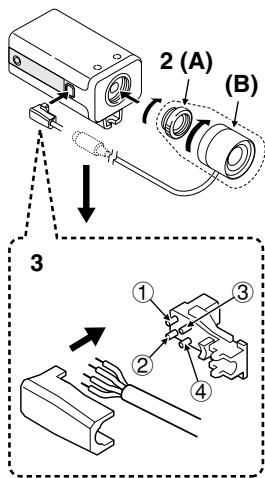
■ Installation of a DC type auto-iris lens (sold separately)



A 1/3 inch CS mount type lens without EE amplifier circuit that only uses a DC power source. This camera can receive (the **A.I. LENS** switch to the DC type) a CS mount type lens without the need of an adaptor.

If the lens plug shape or wiring does not correspond, please install the supplied plug as indicated in the pin layout table.

MOUNTING THE LENS



■ Installation of a VIDEO type auto-iris lens (sold separately)

A 1/2 or 2/3 inch C mount type lens with EE amplifier circuit that uses the video signal and a DC power source.

- 1 Remove the lens mount cap.
- 2 Attach the supplied **C mount adaptor (A)** to the auto-iris lens **(B)**, then install the assembly on the camera.
- 3 Connect the lens plug to the **LENS** connector on the side of the camera.
If the lens plug shape or wiring does not correspond to the specifications below, connect the supplied plug as indicated.
 - When using lenses from other makers, make sure that the pins connections in the plug correspond to the ones of the camera.Refer to the lens specifications to check the pins connections in the plug.
- 4 Set the **A.I. LENS** switch in the camera setup section to the **VIDEO** position.

Pin layout

	DC type lenses	VIDEO type lenses
①	Brake coil (-)	+12 V DC (50 mA max.)
②	Brake coil (+)	Not used
③	Drive coil (+)	Video output (1.0 Vp-p, high impedance)
④	Drive coil (-)	Ground (for video signal and DC power)

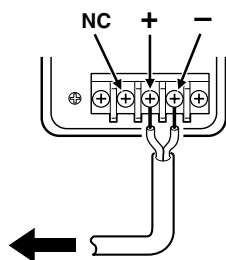
Compatible auto-iris lenses

1/2 inch Sanyo DC type lens	1/2 or 2/3 inch VIDEO type lens
VCL-CS12GY: Standard angle, $f=12$ mm	Standard angle, $f=9$ mm
VCL-CS6GY: Wide angle, $f=6$ mm	Telephoto angle, $f=12$ mm
VCL-CS3GY: Ultra-wide angle, $f=3.7$ mm	More telephoto angle, $f=16$ mm

If using a VIDEO type auto-iris lens

- Set the **ALC** and **LEVEL** controls on the lens to adjust the iris. Normally the **ALC** volume should be turned all the way to **Av** (Average).
- Depending on the type of lens used, the lens may not perform properly. In such a case, adjust the **LEVEL** volume on the lens casing to correct.

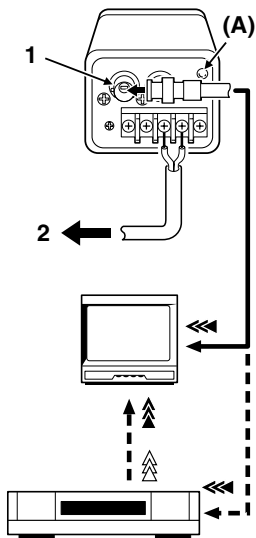
POWER SOURCE



Connect DC 12V power supply to **12V DC** input terminal on the camera.

NC: non connect

CONNECTIONS



(Video signal connections)

▶▶▶ : VIDEO IN

◀◀◀ : VIDEO OUT

Basic connection for monitoring or recording

The peripheral devices (VCR, monitor, lens, etc.) and cables are sold separately.

- 1 Make the video signal connection between the camera and the monitor or time lapse VCR.
- 2 Insert the plug of this power cord into a wall outlet. The **POWER** indicator (A) will light. Adjust the picture on the monitor using the Brightness and Contrast controls.

■ Coaxial cable type and maximum length

- Cable type RG-59U (3C-2V), 250 m maximum.
- Cable type RG-6U (5C-2V), 500 m maximum.
- Cable type RG-11U (7C-2V), 600 m maximum.

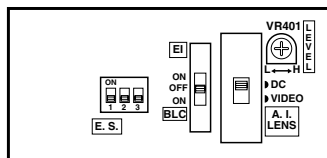
CAUTION:

- The RG-59U type cable should not be run through electrical conduits or through the air.
- Using CCTV/Video-grade coaxial cable.

Note:

When connecting multiple cameras to peripheral devices, make sure to first read the instructions manual for all the devices used.

SETTINGS

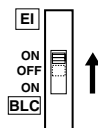


■ Electronic iris function setting

Use a manual or fixed iris lens and set the lens aperture to the shortest F stop. Set the **EI/BLC** switch to **EI-ON** position.

Note:

Please refer to the specifications for dynamic range of the electronic iris.



CAUTION:

- The electronic iris is suitable for normal indoor use. When the **EI/BLC** switch is set to the **EI-ON** position, do not use an auto-iris lens.
- If used under fluorescent light, the image may flicker. In such a case, change to incandescent lighting or set the **EI/BLC** switch to the **OFF** position and use an auto-iris lens.
- When shooting bright subjects, pay attention to the light angle in order to avoid or minimize the smear phenomenon effect.

When using an auto-iris lens (for indoor/outdoor use)

Set the **EI/BLC** switch to the **OFF** position.

CAUTION:

If conditions are outside the electronic iris operation range or more than the maximum illumination, it will cause saturation of the CCD. In that case, use a manual iris lens.

■ Lens iris adjustment

If using a DC type auto-iris lens, you will need to set the **LEVEL** (VR401) volume when shooting in the conditions described below.

L (counterclockwise): To decrease the contrast

H (clockwise): To increase the contrast

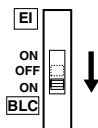
- If shooting simultaneously in a dark room and through a bright window.
- If the subject background is extremely bright or dark.
- If the brightness of the picture on the monitor is not correct.



■ Backlight compensation setting

Use an auto-iris lens and set the **EI/BLC** switch to the **BLC-ON** position, to engage the backlight compensation function.

Use an auto-iris lens. Set the **EI/BLC** switch to **BLC-ON** switch to the **ON** position.



Note:

The backlight compensation will check the light at the centre of the screen.

If using a VIDEO type auto-iris lens

- The **ALC** volume on the lens should be turned all the way to **Av** (Average).
- If the backlight compensation function does not compensate properly for the conditions, set using the **LEVEL** volume on the lens.

CAUTION:

The electronic iris function and the backlight compensation function cannot operate simultaneously.

■ High speed electronic shutter setting

Normally, the speed setting switches for the high speed electronic shutter are all set to the **OFF** position. This sets the electronic shutter speed to 1/60 sec. The switches can be set as indicated in table **A** to select one of the **8** speeds available.

CAUTION:

- When using the high speed electronic shutter, the **EI/BLC** switch must be set to the **OFF** position.
- Using the high speed electronic shutter indoors with low lighting, will give darker pictures. In such a case, add some lights to make sure the lighting is sufficient. If the lighting is very bright, pay attention to the light angle in order to avoid or minimize the smear phenomenon effect.

Table A

① 1/60 sec.	
② 1/100 sec.	
③ 1/250 sec.	
④ 1/500 sec.	
⑤ 1/1000 sec.	
⑥ 1/2000 sec.	
⑦ 1/4000 sec.	
⑧ 1/10000 sec.	

TROUBLESHOOTING

Before taking the camera for repairs, please check below to make sure that the camera is used correctly. If it still does not perform correctly, please consult your dealer or a Sanyo Authorized Service Centre.

■ No picture on the monitor screen

- Is the power turned on to all connected devices? Is the voltage correct?
- Are all the signal connecting cables correctly connected?
- Is the lighting sufficient?
- Has the lens cap been removed?
- Is the lens type (**DC** or **VIDEO**) correctly selected?

Depending on the type of lens, the **A. I. LENS** switch must be set accordingly.

- Is the iris control correctly set?

A: When using a **DC** type lens, the **LEVEL** volume (inside the camera casing) should be adjusted.

B: When using a **VIDEO** type lens, the **LEVEL** volume (on the lens) should be adjusted.

■ The picture is not clear

- Is the monitor correctly adjusted?
- Is the flange-back position correctly set?
- Is the lens focus correctly adjusted?
- Are the lens surfaces clean?

If there is dust or finger prints on the lens, the image quality will deteriorate. To clean the lens use a soft cloth or a commercially available lens cleaning set.

SERVICE

This camera is a precision instruments and if treated with care, will provide years of satisfactory performance. However, in the event of a problem, the owner is advised not to attempt to make repairs or open the cabinet. Servicing should always be referred to your dealer or Sanyo Authorized Service Centre.

SPECIFICATIONS

Scanning system: EIA standard (525 TV lines, 30 frames/sec.)

Interlace: PLL 2:1 interlace

Image device: 1/2 inch solid state image device CCD

Picture elements: 811 (H) x 508 (V)

Effective picture elements: 768 (H) x 494 (V)

Synchronizing system: Internal sync/External sync (Automatic switching)

External sync: VS (composite video signal), 1.0 Vp-p / 75 ohms (to switch from 75 ohms to Hi impedance, remove the internal jumper chip)

Resolution: 570 TV lines horizontally, 350 TV lines vertically

Video output level: 1.0 Vp-p/75 ohms, composite

Video S/N ratio: More than 50 dB

Minimum required illumination: Approx. 0.07 lux with a F 1.2 lens,

(incandescent lighting) approx. 0.09 lux with a F 1.4 lens

Backlight compensation: Manual ON/OFF switching, center zone light measuring system (Active when using an auto-iris lens)

Electronic shutter: 8 speeds, selectable by switches:

(1/60, 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 sec.)

Electronic iris function: Manual ON/OFF switching

Electronic iris range: 0.07 lux to 18,000 (F 1.2, lens)

0.09 lux to 24,000 (F 1.4, lens)

0.36 lux to 100,000 (F 2.8, lens)

Flange-back: 12.5 mm \pm 0.8 mm

Gamma correction: $\gamma = 0.45$

Lens mount: CS mount (or C mount with the supplied adaptor)

Environmental conditions: Temperature: $-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$

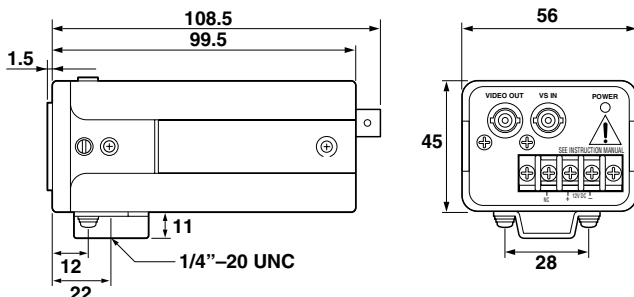
Humidity: less than 90% (no condensation)

Power supply: 12 V DC \pm 10 %

Power requirement: 12 V DC/150 mA (without auto iris lens)

Weight: Approx. 330 g (without lens)

■ Dimensions



Features and specifications are subject to change without prior notice or obligations.